

NOTES ON INDIAN AND CEYLONESE SPECIES OF *GLESSULA*.

By Colonel R. H. BEDDOME, F.L.S.

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## PLATE XV.

HAVING collected the subgenus *Glessula* very largely throughout South India (its headquarters) and Ceylon, and having recently compared my collection with the types in the late Dr. W. T. Blanford's collection, now bequeathed to the Natural History Museum, and with the Benson types in the Cambridge Museum, and the species in the Natural History Museum, I have drawn up the following notes which I think may be of interest to conchologists and aid towards a monograph.

It is an exceedingly difficult group, the species running very much one into another, and there are not many distinctive characters to lay hold of. The apical whorls and the sculpture are the chief, but the size of the adult generally, though not always, and the curvature of the columella are of some importance. The truncation of the latter I do not attach much importance to, as it is very similar in all the species. The number of whorls differs in individuals, but always within certain limits.

The earlier species were described as *Achatina*, *A. nitens* of Gray being the first in 1825. Pfeiffer described about 12, Benson 28, and Blanford 18, and a few have been described by Hanley, Lieut.-Col. Godwin-Austen, and G. Nevill, one each by H. Adams, Möllendorff, and Jousseume, and one from Ceylon by Mr. Sykes. The earlier authors probably never had access to each other's types, and I believe too many species have been made.

1. *GLESSULA TENUISPIRA* (Benson).

*Achatina tenuispira*, Benson: Journ. Asiat. Soc. Bengal, vol. v (1835), p. 353.

*Hab.*—Darjiling; Pegu; N. Canara; Khasia and Daffa Hills.

Reeve's figure is from a small or young shell. Full-grown ones collected in the Teesta Valley near Darjiling, and in N. Canara, measure 44 mm. in length, and have 14 whorls.

2. *GLESSULA BACULINA*, Blanford.

*Glessula baculina*, Blanford: Journ. Asiat. Soc. Bengal, vol. xl (1871), pl. ii, fig. 6.

*Hab.*—Khursiang, near Darjiling.

This is, I believe, only a more slender form of *tenuispira*, as I have specimens intermediate in breadth. As to any difference in the columella, some of my specimens of *tenuispira* have the lower part more bent than in any of the supposed *baculina*.

3. *GLESSULA PERTENCIS* (Blanford).

*Achatina pertencis*, Blanford: Journ. Asiat. Soc. Bengal, vol. xxxiv (1865), p. 79.

*Hab.*—Assam; Arakan; Garo and Naga Hills; Burma.

Blanford's types, and all the specimens I have seen of this, are young shells, with fragile, unformed lips. They fit well with young of *tenuispira*. Blanford himself mentions that there are signs of a passage, and it would certainly not be advisable to consider it a good species without seeing specimens with adult lip.

#### 4. GLESSULA SHIPLAYI (Pfeiffer).

*Achatina Shiplayi*, Pfr. : Mon. Hel., vol. iv, p. 612.

*Hab.*—Nilgiris; Anamallays; Shevaroy's (South India).

Adults up to 36 mm. long, whorls 14. Hanley's figure is from quite a juvenile.

Full-grown specimens were very rarely found by me, though young, half-, and three-quarter grown ones are most abundant on the Nilgiris. This and some other species certainly breed before the shell attains full size or a hardened peristome, as I have taken eggs from such shells. The peristome differs much in mature specimens, sometimes being very thick and solid, sometimes quite thin, but, even then, firm, and not breaking or becoming jagged at the least touch, which is the sign that the shell has not finished its growth. Full-grown examples of *Shiplayi* are very like *tenuispira*, but smaller. It also runs *Nilagirica* very closely, but the latter has a stronger sculpture, and is broader at the base.

#### 5. GLESSULA NILAGIRICA (Benson), Reeve.

*Achatina Nilagirica* (Benson MSS.), Reeve; *Nilagirica*, var. *Kurnoolensis*, Nevill: Journ. Asiat. Soc. Bengal, vol. 1 (1880), p. 136.

The shell I take to be this species is the one described by Nevill. I collected it both on the Nilgiris and Nullaymallays (Kurnool). It is of the same length and has the same number of whorls as *Shiplayi*, and is very like the full-grown shell of that species, only it has a more prominent striation, and is considerably broader towards the base. The young shell is conical from a broad base, the young of *Shiplayi* being much more cylindrical. If Reeve's figure, copied by Nevill, is this species, it must be a small form of it. It is more probably *Perrotteti*.

#### 6. GLESSULA HEBES, Blanford.

*Glessula hebes*, Blanford: Journ. Asiat. Soc. Bengal, vol. xxxix (1870), p. 21, pl. iii, fig. 21.

*Hab.*—Poona; Shevaroy's (Blanford); Pulney Hills and Nilgiris (Nevill).

Ten specimens received from Blanford and Evizard, collected near Poona, are all young, with quite unformed lip; and all the types of *hebes* in Blanford's collection, and the specimens in the Natural History Museum and others that I have seen, are the same. If full-grown, or nearly so, it must be a much smaller species than *Shiplayi*. It runs the young of that species rather closely, but the apex is generally blunter. Specimens collected by me on the Shevaroy's are referred here by Blanford; they are, however, immature, and appear

rather to belong to *Fairbanki*, if that species is distinct, which I doubt. When collected I took them to be young of *Shiplayi*. Until *hebes* and *Fairbanki* are found with mature lips, they must, I think, remain doubtful species.

Hanley's figure of *hebes* has the tapering apex of young *Shiplayi*, and is unlike my types of *hebes*.

7. GLESSULA FAIRBANKI, BENSON.

*Achatina Fairbanki*, Benson: Ann. & Mag. Nat. Hist., vol. xv (1865), p. 14.

*Hab.*—Mahableshwar.

A type-specimen sent me from Mahableshwar by Mr. Fairbank, and a few other examples I have seen in the Benson Collection and elsewhere, are all young shells with unformed lips. It is smaller than *hebes*, but I cannot point out how it differs otherwise.

Hanley's figure well represents my specimen.

8. GLESSULA VADALICA (BENSON).

*Achatina Vadalica*, Benson: Ann. & Mag. Nat. Hist., vol. xv (1865), p. 15.

*Hab.*—Ahmednuggur.

Nearly allied to *Perrotteti*. I have not found it in the Madras Presidency.

9. GLESSULA TAMULICA (BLANFORD).

*Achatina Tamulica*, Blanford: Journ. Asiat. Soc. Bengal, vol. xxx (1861), p. 362.

*Hab.*—Near Trichinopoly.

Blanford's types, my own specimens received from him, and all other specimens that I have seen are not mature, the lip being quite fragile. It is very near *Vadalica*, and has all the appearance of being the young of that species.

10. GLESSULA PERROTTETI (PFEIFFER).

*Achatina Perrotteti*, Pfr.: Mon. Hel., vol. ii, p. 260.

*Hab.*—Nilgiris and Pulney Hills, about the foot of the mountains.

Hanley's figure, Conch. Ind., pl. xxxv, fig. 6, is very good.

11. GLESSULA PRÆLUSTRIS (BENSON).

*Achatina prælustris*, Benson: Ann. & Mag. Nat. Hist., vol. v (1860), p. 462.

*Hab.*—Common in the Orissa and Ganjam districts, east side of the Madras Presidency.

I have never taken it on the western side. My largest specimen measures 40 mm. in length. There is a small variety.

12. GLESSULA HÜGELI (PFEIFFER).

*Achatina Hügelii*, Pfr.: Mon. Hel., vol. ii, p. 259.

*Hab.*—Kashmir.

Near *Vadalica*.

## 13. GLESSULA BURRAILENSIS, G.-Austen.

*Glessula Burrailensis*, G.-Aust.: Journ. Asiat. Soc. Bengal, vol. xliv (1875), p. 3, pl. i, fig. 6.

*Hab.*—East Burrail range, 7,000 feet.

## 14. GLESSULA BUTLERI, G.-Austen.

*Glessula Butleri*, G.-Aust.: Journ. Asiat. Soc. Bengal, vol. xliv (1875), p. 4, pl. i, fig. 7.

*Hab.*—East Burrail range.

## 15. GLESSULA CHESSONI (Benson).

*Achatina Chessoni*, Benson: Ann. & Mag. Nat. Hist., vol. v (1860), p. 462.

*Hab.*—Mahableswar; North Canara forests; near Sircee.

## 16. GLESSULA TORNENSIS, Blanford.

*Glessula Tornensis*, Blanf.: Journ. Asiat. Soc. Bengal, vol. xxxix (1870), p. 22, pl. iii, fig. 22.

*Hab.*—Torna Hill, near Poona; Anamallays; Tinnevelly; and Travancore Ghats.

My Travancore specimens were labelled *subtornensis* by Nevill, but I cannot see how they differ. I took a very beautiful, dark chocolate-coloured variety on the Calcad Hills in Tinnevelly.

## 17. GLESSULA TEXTILIS (Blanford).

*Achatina textilis*, Blanf.: Journ. Asiat. Soc. Bengal, 1866, p. 41.

*Hab.*—Anamallay Hills, 6,000 feet; Pulney Hills; Tinnevelly and Travancore Ghats.

Varies in diameter from 10 to 14 mm. I have specimens from the Tinnevelly Ghats in which the textile colouring is reduced to a single narrow band on each of the three lower whorls, or is entirely obsolete. Dr. Blanford has noticed that this species does not differ from *Tornensis*, except in the colouring.

## 18. GLESSULA SENATOR (Hanley).

*Achatina (Glessula) senator*, Hanley: Proc. Zool. Soc., 1875, p. 606; Conch. Ind., pl. clv, fig. 4.

*Hab.*—Peermede Hills, Travancore.

Only differs from the last two species in its beautiful coloration.

## 19. GLESSULA ISIS (Hanley).

*Achatina (Glessula) Isis*, Hanley: Proc. Zool. Soc., 1875, p. 606; Conch. Ind., pl. clv, fig. 5.

*Hab.*—Foot of the Pulney Hills.

Much the colouring of *textilis*, but the shell is very different in form, being elongated and narrow.

## 20. GLESSULA SUBPERROTETI, n.sp. Pl. XV, Figs. 1, 1a.

Testa ovato-turrita, superne attenuata, nitidissima, leviter plicato-striata, fulvo-cornea; spira turrita, apicem versus obtusiusculum attenuata; sutura impressa, crenulata; anfractus 9, vix convexiusculi,

ultimus  $\frac{2}{3}$  testæ subæquans; apertura semi-ovalis; columella subrecta, albido-callosa, peristomate recto, tenui, marginibus callo albido junctis. Long. 28, diam. 9 mm.; apertura 10 mm. longa, 5 lata.

*Hab.*—Travancore Hills, above Calcad.

Intermediate between *Chessonii*, Bens., and *Perrotteti*, Pfr. The sculpture is much less prominent than in the former.

21. GLESSULA CANARICA, n.sp. Pl. XV, Figs. 4, 4a.

Testa turrito-oblonga, tenuiuscula, spira oblonga, apice obtuso, politissima, purpureo-fusca, distincte et confertim subcostulato-striata, sub lente confertim decussata, sutura impressa, anfractus 9, subplaniusculi, ultimus  $\frac{2}{3}$  longitudinis æquans; apertura verticalis, oblongo-semi-ovalis; peristoma tenue; columella valde arcuata, antice fere verticaliter truncata. Long. 25, diam. 9 mm.; aperture 8 mm. longa, 4 lata.

*Hab.*—South Canara Ghats (Kudra Mukh). Rare.

In its blunt, oblong spire it resembles the large form of *amentum* as figured by Hanley. It is a beautifully sculptured shell.

22. GLESSULA ANAMULLICA (Blanford).

*Achatina Anamullica*, Blanf.: Journ. Asiat. Soc. Bengal, vol. xxxv (1866), p. 37.

*Hab.*—Travancore Hills and Anamallays.

Though a good many of this fine dark chocolate-coloured species were taken, none of them had a firm lip, and though eggs were taken from some of them they are probably not full-grown. It is not very like any one species, the nearest to it being *Perrotteti*.

23. GLESSULA INORNATA (Pfeiffer).

*Achatina inornata*, Pfr.: Mon. Hel., vol. iii, p. 490.

Long. 30, diam. 12 mm.

*Hab.*—Ceylon; South Canara forests.

Var. *minor*. Long. 18–20 mm.

*Hab.*—Ceylon.

24. GLESSULA SUBINORNATA, n.sp. Pl. XV, Figs. 3, 3a.

Testa oblongo-turrita, solida, confertim striata, striis minutissimis obsolete spiralibus decussata, fulva, nitida, apice obtusiusculo, sutura leviter impressa, confertissime crenulata; anfractus 8 planiusculi, ultimus  $\frac{2}{3}$  longitudinis æquans, convexiusculus; spira elongato-turrita; columella arcuata, albo-callosa, oblique abrupte truncata; apertura triangulari-semiovata, intus albida; peristoma simplex, obtusum. Long. 26, diam. 8 mm.; apertura 10 mm. longa, 5 lata.

*Hab.*—Sispara Ghat, on the Nilgiris.

Allied to the Ceylonese *inornata* and *parabilis*. Smaller and narrower than the former; larger and with a more elongated spire than the latter.

Var. *minor*. Long. 21, diam. 7 mm.; apertura 8 mm. longa, 4 lata.

*Hab.*—Brumagherry Hills, Wynad.

Of a pale steel colour, otherwise only differing in size from the

type. Very near *parabilis*, but with a rather longer spire and smaller aperture.

25. GLESSULA BEDDOMEI (Blanford).

*Achatina Beddomei*, Blanf.: Journ. Asiat. Soc. Bengal, vol. xxxv (1866), p. 41.

*Hab.*—Anamallay Hills, 5–7000 feet; Ceylon.

The Ceylon specimens are slightly narrower, but do not otherwise differ.

Var. *pallens*.

*Hab.*—Ceylon.

Only differing from the type in being of a pale straw colour. There are numerous specimens of this in the Nevill Collection purchased by Messrs. Sowerby & Fulton, and a single specimen in the late Dr. Blanford's collection labelled *G. Skimmeri*.

This is, I believe, *inornata*, var.  $\beta$ , Pfr., Mon. Hel., vol. iii, p. 490.

26. GLESSULA BOLUMPATTIANA (Bedd.), (Hanley).

*Achatina Bottampotana* (Beddome MSS.), Hanley: Conch. Ind., pl. clvi, fig. 1 (*Bottampotana* in error).

*Hab.*—Bollampatty Hills (5–6000 feet), above Palghat.

The decussation in the sculpture is much more prominent than in any other species. Hanley's figure is good, but does not show the sculpture.

27. GLESSULA CEYLANICA (Pfeiffer).

*Achatina Ceylanica*, Pfr.: Mon. Hel., vol. ii, p. 258.

*Hab.*—Ceylon.

28. GLESSULA PUNCTOGALLANA (Pfeiffer).

*Achatina punctogallana*, Pfr.: Mon. Hel., vol. iii, p. 493.

*Hab.*—Point de Galle, Ceylon.

I cannot distinguish this species satisfactorily from *Ceylanica*, except that the latter is generally larger. Nevill suspected they were one and the same. Pfeiffer says the spire of *punctogallana* is longer, and the last whorl shorter.

There are some very large specimens of *Ceylanica* in the Natural History Museum, much larger than I ever found in Ceylon, 30 mm. long by 14 in diam.

29. GLESSULA NITENS (Gray).

*Achatina nitens*, Gray: Ann. Philos., vol. ix (1825), p. 415.

*Hab.*—Ceylon.

30. GLESSULA PANÆTHA (Benson).

*Achatina panætha*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 384.

*Hab.*—Ceylon.

Benson's types of this species in the Cambridge Museum agree exactly with the numerous specimens of *nitens* in the Natural History

Museum, South Kensington. These latter must, I think, include Gray's types, as the Museum possesses his collection.

The four last species are very closely allied, and in my opinion only forms of one variable species. I should not even make varieties of them.

31. GLESSULA SERENA (Benson).

*Achatina serena*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 384.

*Hab.*—Ceylon.

Nearly allied to *Ceylanica*.

32. GLESSULA SUBSERENA, n.sp. Pl. XV, Figs. 7, 7a.

Testa ovato-turrita, solidiuscula, politissima, obsolete striatula, fulvo-cornea, pellucida; spira subturrita, apice obtusato; sutura impressa, marginata, crenulata; anfractus 7 planiusculi, ultimus  $\frac{1}{2}$  longitudinis vix æquans; apertura semi-ovalis; columella valde arcuata, albido-callosa, marginibus callo junctis, ad basin abrupta et oblique truncata. Long. 22, diam. 11 mm.; apertura 10 mm. longa, 5 lata.

*Hab.*—Peermede (Travancore) and Anamallays.

The last whorl is longer, and the spire less elevated than in the Ceylonese *serena*, and the whorls, especially the upper ones, are less convex.

33. GLESSULA DESHAYESI (Pfeiffer).

*Achatina Deshayesi*, Pfr.: Mon. Hel., vol. iii, p. 495.

*Hab.*—Ceylon.

Like a very small *niteus* with a shorter spire.

34. GLESSULA PACHYCHEILA (Benson).

*Achatina pachycheila*, Bens.: Ann. & Mag. Nat. Hist., vol. xii, (1853), p. 14.

*Hab.*—Ceylon.

According to Benson's types in the Cambridge Museum, this species is a narrower shell than the last. The two species are, however, closely allied, and often confused in collections.

35. GLESSULA PYRAMIS (Benson).

*Achatina pyramis*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 463.

*Hab.*—Khasia Hills.

36. GLESSULA LEPTOSPIRA (Benson).

*Achatina leptospira*, Bens.: Ann. & Mag. Nat. Hist., vol. xv (1865), p. 14.

*Hab.*—Someysur Hills.

37. GLESSULA NOTIGENA (Benson).

*Achatina notigena*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 462.

*Hab.*—Mahableshwar and Bombay Ghats; Cherra Poonjee (Sylhet).

All the numerous examples I have seen of this species, except one, are immature and in no way separable from *tenuispira* of the same size. Amongst Benson's five type-specimens there is, however, one which has the lip hardened, and nearly finished off. It is hardly more than a small form of *tenuispira*.

## 38. GLESSULA SARISSA (Benson).

*Achatina sarissa*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 463.

*Hab.*—Lower Bengal, banks of the Ganges.

I have a single specimen of a species allied to this from the Bombay Ghats, but it differs in being smoother, having a blunter apex and two whorls less, and in the penultimate and antepenultimate whorls being larger.

## 39. GLESSULA VERUINA (Benson).

*Achatina veruina*, Bens.: Ann. & Mag. Nat. Hist., vol. xii (1853), p. 94.

*Hab.*—Ceylon, at Norlande.

A rare and well-marked species. There is no specimen in the Benson Collection at Cambridge.

## 40. GLESSULA HASTULA (Benson).

*Achatina hastula*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 461.

*Hab.*—Darjiling.

## 41. GLESSULA CORROSULA (Pfeiffer).

*Achatina corrosula*, Pfr.: Proc. Zool. Soc., 1856, p. 35; Mon. Hel., vol. iv, p. 612.

*Hab.*—Nilgiris.

## 42. GLESSULA BENSONIANA (Pfeiffer).

*Achatina Bensoniana*, Pfr.: Mon. Hel., vol. iii, p. 494; Nevill, Journ. Asiat. Soc. Bengal, vol. 1, p. 137, pl. v, figs. 16, 16a.

*Hab.*—Nilgiris.

## 43. GLESSULA SUBFUSIFORMIS (Blanford).

*Achatina (Glessula) subfusiformis*, Blanf.: Proc. Zool. Soc., 1869, p. 449; Nevill, Journ. Asiat. Soc. Bengal, vol. 1, p. 138, pl. v, fig. 13.

*Hab.*—Ponsee, in Yunnan, 3,300 feet.

## 44. GLESSULA JEYPORENSIS, n.sp. Pl. XV, Figs. 6, 6a.

Testa oblongo-turrita, tenuis, striatula, nitida, luteo-cornea; spira subturrita, ad apicem obtusa; sutura impressa, crenulata; anfractus 8 subplaniusculi, ultimus  $\frac{2}{3}$  longitudinis fere æquans; columella valde arcuata, ad basim truncata; apertura semi-ovalis; peristoma simplex. Long. 18, diam. 6 mm.; apertura 5 mm. longa, 3 lata.

*Hab.*—Jeypore Hills, east coast of Madras Presidency.

Allied to *Bensoniana*, but with a shorter, blunter spire.



## 45. GLESSULA JERDONI (Benson), (Reeve).

*Achatina Jerdoni*, Benson MSS. : Reeve, Conch. Icon., vol. v, pl. xxi, fig. 80 ; Pfeiffer, Mon. Hel., vol. iii, p. 494.

*Hab.*—Nilgiris ; Anamallays ; Cherra Poonjee.

## 46. GLESSULA SINGHURENSIS, Blanford.

*Glessula Singhurensis*, Blanf. : Journ. Asiat. Soc. Bengal, vol. xxxix (1870), p. 19, pl. iii, fig. 17.

*Hab.*—Singhur, near Poona.

## 47. GLESSULA AMENTUM (Benson), (Reeve).

*Achatina amentum*, Bens. MSS. : Pfr., Mon. Hel., vol. iii, p. 499.

*Hab.*—Orissa and Ganjam.

I found the smaller variety very abundant on the top of the Myhendra Hill (Ganjam). The larger variety, found near Calcutta and in Central India, and well figured by Hanley, is a rare shell. It has a shorter and blunter apex and fewer whorls than *Vadalia*, but specimens of that species sometimes do duty for it in collections.

## 48. GLESSULA FACULA (Benson).

*Achatina facula*, Bens. : Ann. & Mag. Nat. Hist., vol. v (1860), p. 466.

*Hab.*—Nilgiris ; Pulney Hills ; Nullaymallays, Kurnool ; Jeypore Hills, east side of Madras.

Hanley's figure is not good.

## 49. GLESSULA ILLUSTRIS, Godwin-Austen.

*Glessula illustris*, G.-Aust. : Journ. Asiat. Soc. Bengal, vol. xlv (1875), p. 3, pl. i, fig. 5.

*Hab.*—North Cachar Hills, 7,000 feet ; Jaintia Hills, 1,000 feet.

I can distinguish this in no way from the last species (*facula*).

## 50. GLESSULA BOTELLUS (Benson).

*Achatina botellus*, Bens. : Ann. & Mag. Nat. Hist., vol. v (1860), p. 465.

*Hab.*—Nilgiris.

H. Nevill labelled my specimens from the foot of the Nilgiris *botellus*, var. *convexior*, but I do not see how they differ from the type. Hanley's figure (Conch. Ind.) is good.

## 51. GLESSULA OROPHILA (Benson), (Reeve).

*Achatina orophila*, Bens. MSS. : Reeve, Conch. Icon., vol. v, pl. xix, fig. 105.

*Hab.*—Anamallay Hills ; S. Canara ; Golcondah Hills, east side of Madras Presidency.

My Golcondah specimens were labelled by H. Nevill *G. subbrevis*, but I cannot see how they differ. Nevill, I think, only saw young examples. Reeve's figure, copied by Nevill, is good.

## 52. GLESSULA ARTHURII (Benson).

*Achatina Arthuri*, Bens. : Ann. & Mag. Nat. Hist., vol. xiii (1864), p. 209.

*Hab.*—Mahableshwar.

I cannot distinguish this shell from *orophila*, and I think it will have to be a synonym.

## 53. GLESSULA OREAS (Benson), (Reeve).

*Achatina oreas*, Bens. MSS. (not of Pfr.): Nevill, Journ. Asiat. Soc. Bengal, vol. 1 (1881), p. 135, pl. v, fig. 11.

*Hab.*—Tinnevely and Travancore Hills; South Canara Ghats; Nullaymallays, Kurnool.

*G. Paviei*, Morlet (J. de Conch., 1892, p. 321, pl. vii, figs. 4-4b), from Tonkin, is, I fear, a synonym. I cannot distinguish it from the Indian *oreas*.

## 54. GLESSULA PSEUDOREAS (Nevill).

*Stenogyra (Glessula) pseudoreas*, Nev.: Journ. Asiat. Soc. Bengal, vol. v (1881), p. 136; Pfeiffer, Mon. Hel., vol. iii, p. 495, as *oreas*.

*Hab.*—S. Canara Ghats; Nilgiris; Anamallays; Pulney Hills; Tinnevely Hills.

Nevill named the Anamallay and Pulney specimens var. *subdeshayesiana*. I have seen no Nilgiri specimens, but I cannot distinguish any variety amongst my copious specimens from the other hill-forests of South India.

## 55. GLESSULA CRASSILABRIS (Benson).

*Achatina crassilabris*, Bens.: Journ. Asiat. Soc. Bengal, vol. v (1836), p. 353.

*Hab.*—Khasia Hills; Darjiling.

Hauley's figure is good, but scarcely shows the striation, which is prominent.

## 56. GLESSULA OROBIA (Benson).

*Achatina orobia*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 461.

*Hab.*—Darjiling; Naga Hills.

## 57. GLESSULA SCRUTILLUS (Benson).

*Achatina scrutillus*, Bens.: Ann. & Mag. Nat. Hist., vol. v (1860), p. 463.

*Hab.*—Orissa and Central India; banks of the Narbudda.

## 58. GLESSULA GEMMA (Benson), (Reeve).

*Achatina gemma*, Benson MSS.: Reeve, Conch. Icon., vol. v, pl. xxii, fig. 123.

*Hab.*—Lower Bengal; Rajmahal; Chittagong, etc.; plains of Malabar and Beypur.

## 59. GLESSULA CRASSULA (Benson), (Reeve).

*Achatina crassula*, Benson MSS.: Reeve, Conch. Icon., vol. v, pl. xxii, fig. 120.

*Hab.*—Darjiling; Jaintia; Naga Hills.

## 60. GLESSULA PULLA, Blanford.

*Glessula pulla*, Blanf.: Journ. Asiat. Soc. Bengal, 1870, vol. xxxix, p. 21, pl. iii, fig. 20.

*Hab.*—Torna (Bombay Presidency).

## 61. GLESSULA PAUPERCULA, Blanford.

*Achatina paupercula*, Blanf.: Journ. Asiat. Soc. Bengal, vol. xxx (1861), p. 362, pl. i, fig. 16.

*Hab.*—Hills in Salem District; Anamallays; Tinnevely; Travancore Hills; Kurnool Hills.

This was largely distributed by me under Nevill's MS. name of *inconspicua*, but identified as this species from a single type-specimen in Dr. W. Blanford's collection.

Var. *nana*.

A shorter, more obtuse form, occurring occasionally with the type form, and very like *Sattaraensis*, but shorter.

## 62. GLESSULA SATTARAENSIS (H. Adams), (Hanley &amp; Theobald).

*Achatina (Electra) Sattaraensis*, H. Ad. MSS., for *fusca* (preoc.): Proc. Zool. Soc., 1868, p. 15, pl. iv, fig. 10.

*Hab.*—Sattara; Ceylon central provinces; Rambaddy Ghats.

## 63. GLESSULA CAPILLACEA (Pfeiffer).

*Achatina capillacea*, Pfr.: Proc. Zool. Soc., 1854, p. 294; Mon. Hel., vol. iv, p. 614.

*Hab.*—Ceylon.

I took two specimens on the Haycock Mountain. Length 9 to 11 mm.

## 64. GLESSULA COLLETTÆ, Sykes.

*Glessula Collettæ*, Sykes: Proc. Malac. Soc., vol. iii, p. 73, pl. v, fig. 1.

*Hab.*—Ceylon.

## 65. GLESSULA SUBJERDONI, n.sp. Pl. XV, Figs. 2, 2a.

Testa oblongo-turrita, tenuis, leviter striatula, nitida, subpellucida, fulvo-cornea; spira subturrita, ad apicem obtusiuscula; sutura impressa; anfractus 7-8, subplaniusculi, ultimus 4-7 longitudinis vix æquans, basi attenuatus; columella leviter arcuata, paulo supra basin aperturæ truncata; apertura verticalis, semi-ovalis; peristoma simplex, obtusiusculum. Long. 11, diam. 3.5 mm.; apertura 2.5 mm. longa, 2 lata.

*Hab.*—Jeypore and Golcondah Hills, east side of Madras Presidency.

A smaller and more slender shell than *Jerdoni*, and much larger than *paupercula*, of which it may be a large form.

## 66. GLESSULA GRACILIS, n.sp. Pl. XV, Figs. 9, 9a.

Testa parva, cylindrico-turrita, solidula, vix nitens, evidenter striatula; spira elongata, ad apicem obtusa; sutura impressa, crenulata; anfractus 8 planiusculi, ultimus  $\frac{1}{2}$  longitudinis vix æquans, basi parum attenuatus; columella parum obliqua, paulo supra basin aperturæ truncata; apertura verticalis, semi-ovalis; peristoma intus albidum, obtusum. Long. 11, diam. 2 mm.; apertura 2.5 mm. longa, 1.5 lata.

*Hab.*—Nilgiri Hills; Jeypore Hills, east coast of Madras.

The Jeypore specimens are slightly larger, the whorls rather more convex, and slightly angular close to the sutures.

## 67. GLESSULA PUSILLA, n.sp. Pl. XV, Figs. 5, 5a.

Testa turrito oblonga, tenuis, nitidula, luteo-cornea, leviter striatula; spira turrita, ad apicem obtusa; sutura crenulata; anfractus 6-6½, parum convexi, ultimus  $\frac{2}{3}$  longitudinis æquans; columella valde arcuata, basi antice fere verticaliter truncata; apertura semi-ovalis; peristoma rectum, albidum. Long. 5-5.5, diam. 1.75-2 mm.; apertura 1.5 mm. longa, 1 lata.

*Hab.*—Ceylon, Rambaddy Ghat; Anamallay Hills; Shevaroyes; Nilgiris (South India).

Much smaller than *Collette*, its nearest ally, with weaker sculpture and paler colour.

## 68. GLESSULA MULLORUM (Blanford).

*Achatina mullorum*, Blanf.: Journ. Asiat. Soc. Bengal, vol. xxx (1861), p. 362, pl. i, fig. 17.

*Hab.*—Madras.

## 69. GLESSULA BLANFORDIANA (Nevill).

*Stenogyra (Glessula) blanfordiana*, G. Nevill: Journ. Asiat. Soc. Bengal, vol. 1 (1877), p. 138, pl. v, fig. 12; vol. 1 (1881), pt. 2, with fig.

*Hab.*—Ponsee, Yunnan, and at Bhamo.

I have seen no specimens.

## 70. GLESSULA PEGUENSIS (Blanford).

*Achatina peguensis*, Blanf.: Journ. Asiat. Soc. Bengal, vol. xxxiv (1865), p. 78.

*Hab.*—Pegu.

Hanley's figure is not good.

## 71. GLESSULA BREVIS (Pfeiffer).

*Achatina brevis*, Pfr.: Proc. Zool. Soc., 1861, p. 387.

*Hab.*—Poona and Ahmednuggur; Jeypore Hills, east side of Madras Presidency.

Nevill named my Jeypore specimens *microsculpta*, MSS., but I cannot see how they differ from *brevis*. I do not think Nevill had full-grown specimens.

Hanley's figure is too broad towards the base, and does not show the sculpture, which is peculiar.

## 72. GLESSULA FILOSA, Blanford.

*Glessula filosa*, Blanf.: Journ. Asiat. Soc. Bengal, vol. xxxix (1870), p. 19, pl. iii, fig. 16.

*Hab.*—Travancore and Tinnevely Ghats.

## 73. GLESSULA SUBFILOSA, n.sp. Pl. XV, Figs. 8, 8a.

Testa elongato turrita, tenuis, fulvo-cornea, distincte plicato-striata; spira elongata, ad apicem subobtusa, elongato-conica; sutura impressa, anfractus 10 planiusculi, ultimus subcarinatus  $\frac{1}{3}$  longitudinis totius vix æquans; apertura lunato-subovalis; peristoma tenue; columella valde arcuata, oblique abrupte truncata. Long. 16, diam. 5 mm. apertura 5 mm. longa, 3 lata.

*Hab.*—Sirumallay Hills, Dindigul.

The prominent sculpture is like that of *filosa*, but it is a very much smaller shell, with a much more elongated apex.

74. GLESSULA LYRATA, Blanford.

*Glessula lyrata*, Blanf. : Journ. Asiat. Soc. Bengal, vol. xxxix, p. 20, pl. iii, fig. 19.

*Hab.*—Mahableshwar.

Var.  $\beta$ , *Mutharanica*, Blanf., l.c.

*Hab.*—Matheran.

Having seen Blanford's types, I should not be inclined to give it specific rank as Nevill has done.

75. GLESSULA RUGATA, Blanford.

*Glessula rugata*, Blanf., l.c. : p. 20, pl. iii, fig. 18.

*Hab.*—Singhur and Poorundhur, Bombay Presidency.

76. GLESSULA LATESTRIATA, Möllendorff.

*Glessula latestriata*, Mlldff. : Nachrichtsb. deutsch. Mal. Gesell., 1897, p. 166.

*Hab.*—Shan States. Not seen by me.

77. GLESSULA SIMONI, Jousseau.

*Glessula Simoni*, Jous. : Mém. Soc. Zool. France, vol. vii, p. 293, fig. 7.

*Hab.*—Ceylon.

A very small species which I have not seen.

EXPLANATION OF PLATE XV.

FIGS. 1, 1a.	<i>Glessula subpervotteti</i> , n.sp.
,, 2, 2a.	,, <i>subjerdoni</i> , n.sp.
,, 3, 3a.	,, <i>subinornata</i> , n.sp.
,, 4, 4a.	,, <i>Canarica</i> , n.sp.
,, 5, 5a.	,, <i>pusilla</i> , n.sp.
,, 6, 6a.	,, <i>Jeyporensis</i> , n.sp.
,, 7, 7a.	,, <i>subserena</i> , n.sp.
,, 8, 8a.	,, <i>subfilosa</i> , n.sp.
,, 9, 9a.	,, <i>gracilis</i> , n.sp.